

ATTENUATED EMBEDDED PHASE SHIFT PHOTOMASK BLANKS

ABSTRACT

An attenuating embedded phase shift photomask blank that produces a phase shift of the transmitted light is formed with an optically translucent film made of metal, silicon, nitrogen or metal, silicon, nitrogen and oxygen. A wide range of optical transmission (0.001 % up to 20 % at 193 nm) is obtained by this process. A post deposition process is implemented to obtain the desired properties (stability of optical properties with respect to laser irradiation and acid treatment) for use in industry. A special fabrication process for the sputter target is implemented to lower the defects of the film.